Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

    1.1. Name of the Data, data collection Project, or data-producing Program:
        2009 NYS DEC Lidar: West of Hudson, NY

    1.2. Summary description of the data:
        Lidar based surface elevation data collection project in WOH (NYSDEP), collected in 2009. Products generated include LiDAR point data in LAS Binary format v1.1.

        The final LiDAR LAS 1.1 was created in UTM Zone 18 North, referenced to NAD83 and NAVD 88, in meters. The final LiDAR DEM was verified against FEMA checkpoints in order to perform a redundancy check against the GPS solutions. These accuracy checks also verified that the data meets the guidelines outlined in FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners and Appendix 4B, Airborne Light Detection and Ranging Systems.

        The areas of interest were flown at an altitude of 1200 meters (3937 feet) above mean terrain.

        Airspeed - 120 knots,

        Laser Pulse Rate - 50,000 Hz,

        Full Field of View - 60 degrees,

        Scane Rate - 32 Hz,

        Swath Width - 1300 meters.

    1.3. Is this a one-time data collection, or an ongoing series of measurements?
        One-time data collection

    1.4. Actual or planned temporal coverage of the data:
        2009-03-31 to 2009-06-24

    1.5. Actual or planned geographic coverage of the data:
        W: -75.407586, E: -74.038881, N: 42.4816, S: 41.768409

    1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Model (digital)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?
Yes

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

Unknown

5. Data Lineage and Quality
NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible
(describe or provide URL of description):
Process Steps:

- 2009-01-01 00:00:00 - Data collection: Using Sanborn's Leica ALTM_SN40 and ALTM_SN49 Light Detection And Ranging (LiDAR) system, 428 flight lines of standard density (1.0 meter ground sample distance) data were collected over areas in WOH (NYSDEP) 2009 (approximately 1996.18 square miles). Two returns were recorded for each laser pulse along with an intensity value for each return. The data acquisition occurred in 45 missions between April 16, 2009 , and June 25, 2009. During the LiDAR campaign, the Sanborn field crew conducted a GPS field survey to establish final coordinates of the ground control stations for final processing of the base-remote GPS solutions.

- 2009-01-01 00:00:00 - Airborne GPS processing: Airborne GPS data was differentially processed and integrated with the post processed IMU data to derive a smoothed best estimate of trajectory (SBET). The SBET was used to reduce the LiDAR slant range measurements to a raw georeferenced point. Airborne GPS is differentially processed using the GrafNAV v7.50 software by Waypoint Consulting of Calgary, Alberta, Canada.

- 2009-01-01 00:00:00 - IMU data processing: IMU data provides information concerning roll, pitch and yaw of collection platform during collection event. IMU information allows the pulse vector to be properly placed in 3D space allowing the distance from the aircraft reference point to be properly positioned on the elevation model surface. IMU data is processed using the POSPac v4.2 software by Applanix Corporation of Richmond Hill, Ontario, Canada.

- 2009-01-01 00:00:00 - LiDAR point classification The classification and quality control (QC) of LiDAR data is carried out using TerraScan software v. 8.003 by Terrasolid Limited of Helinski, Finland. The bare earth extraction from the point cloud is the result of a morphological processing routine run in TerraScan. A set of user-defined distances and angles are used by the software to build a ground surface from established 'aerial low seed points'. The reclassifying of the data in areas of overlapping scans is done before the classification of the LAS ground points (DEM). This means the point cloud from which the ground points are extracted is more uniform in terms of point density. The 'cut-overlap' process is performed with the aid of the aircraft trajectory (reduced to the sensor's trajectory) and the scan angle value within the LAS data. For this project, the value used for cutting the overlap was 25 degrees. This means that data from a single scan greater than 12.5 degrees off nadir was classified to class 12 overlap. Using the trajectory and embedded angle information, the software (TerraScan) is able to properly

reclassify the overlap points so that the remaining point cloud is edge-matched. That is to say, there are no data voids within the point cloud with class 12 overlap points turned off.

- 2009-01-01 00:00:00 - Output LAS files The tiling and final LAS file creation was performed using LiDAR CuePac v5.0 from GeoCue Corporation of Madison, Alabama, USA. By client specification, the LiDAR point cloud data were cut to square, 750 x 750 meter (~56 Ha, 140 acres) tiles. The naming convention used for the tiles is based on the truncated grid coordinate at the southwest corner point of origin of the tile.

- 2009-01-01 00:00:00 - Summary and algorithms for filtering data: The classification algorithms used on the LiDAR point cloud involved several iterative steps including the removal of low points and other outlyers, the culling of overlap data, and finally the classification of the LiDAR DEM. This process begins with automated routines and ends with a 100% manual edit and QC check of the data. Once the data set classification accuracy was deemed sufficient and no quality issues were found, a final vertical accuracy assessment was performed on the LiDAR DEM.

- 2009-01-01 00:00:00 - Data Validation -   The final LiDAR LAS 1.1 was created in UTM Zone 18 North, referenced to NAD83 and NAVD 88, in meters. The final LiDAR DEM was verified against FEMA checkpoints in order to perform a redundancy check against the GPS solutions. These accuracy checks also verified that the data meets the guidelines outlined in FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners and Appendix 4B, Airborne Light Detection and Ranging Systems.

- 2020-10-04 00:00:00 - NOAA OCM received the lidar data in 8,909 LAS format binary files. No project report was delivered with the data. The data were in UTM Zone 18N NAD83 meters coordinates and NAVD88 (Geoid03) elevations in meters. 1. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges. It was determined that, in addition to the lidar point classifications specified in the metadata of 1 - Unclassified, 2 - Bare Earth, 7 - Low Points (noise), and 12 - Overlap, classes 3 - Low Vegetaion, 4 - Medium Vegetation, 5 - High Vegetation and 6 - Building were also present.   2. Internal OCM scripts were run on the las files to convert to laz format, to convert from orthometric (NAVD88) elevations to NAD83 (2011) ellipsoid elevations using the Geoid 03 model, to convert from UTM Zone 18 North NAD83 (2007) coordinates in meters to geographic coordinates, to assign the geokeys, to sort the data by gps time and zip the data to database and to http. All point classifications were processed through.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation
The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?
No

6.1.1. If metadata are non-existent or non-compliant, please explain:
Missing/invalid information:
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 5.2. Quality control procedures employed
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.4. Approximate delay between data collection and dissemination
- 8.3. Approximate delay between data collection and submission to an archive facility

6.2. Name of organization or facility providing metadata hosting:
NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:
https://www.fisheries.noaa.gov/inport/item/63037

6.4. Process for producing and maintaining metadata
(describe or provide URL of description):
Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access
NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?
Yes

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:
https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=9180/details/9180
https://coast.noaa.gov/htdata/lidar4_z/geoid18/data/9180

7.3. Data access methods or services offered:
Data is available online for bulk or custom downloads

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection
The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)
NCEI_CO

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):
Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?
Discuss data back-up, disaster recovery/contingency planning, and off-site data storage

relevant to the data collection
>   Data is backed up to tape and to cloud storage.

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.